IPv6 Deployment at Google Enterprise Network

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Google

The motivations for IPv6 Deployment at Google Enterprise Network

From an enterprise point of view:

- Urgency : IP Addresses exhaustion.
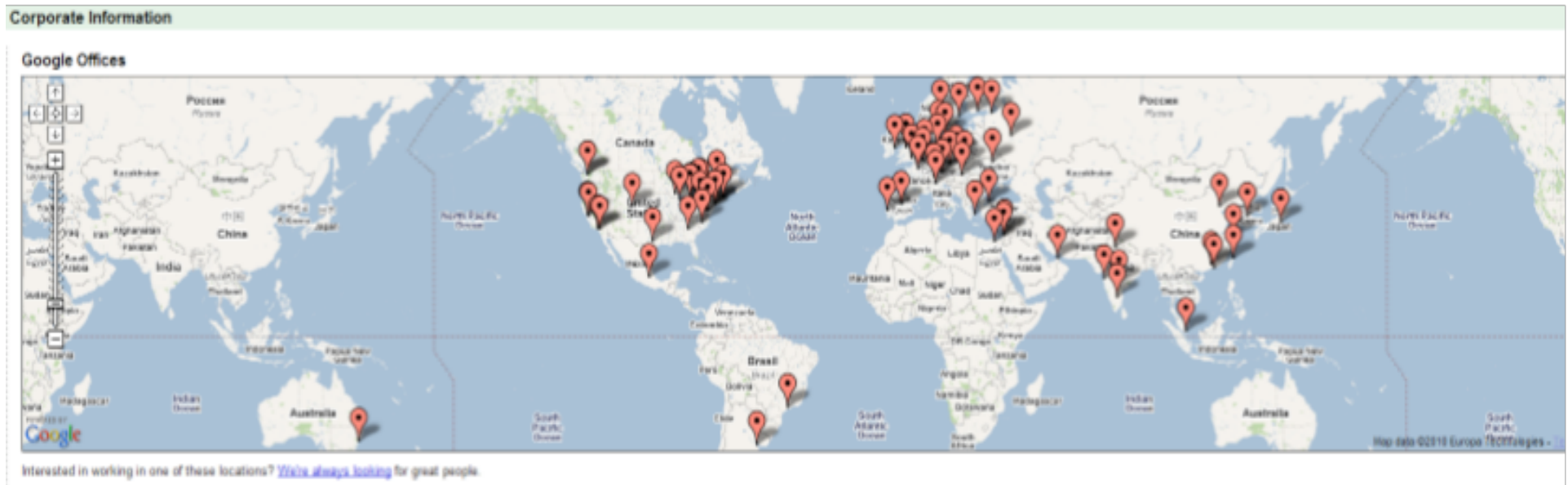- Looking Forward : Allow internet Growth and better end to end connectivity.

For Google :
- Provide IPv6 connectivity to support the efforts to build IPv6 ready Products.
- Innovation and early adoption.

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The Enterprise Network at Google

- More than 19,000 users.
- More than 70 offices spread across 36 countries.
- Multi-Vendor Network.

Corporate Information

Google Offices

Interested in working in one of these locations? We're always looking for great people.
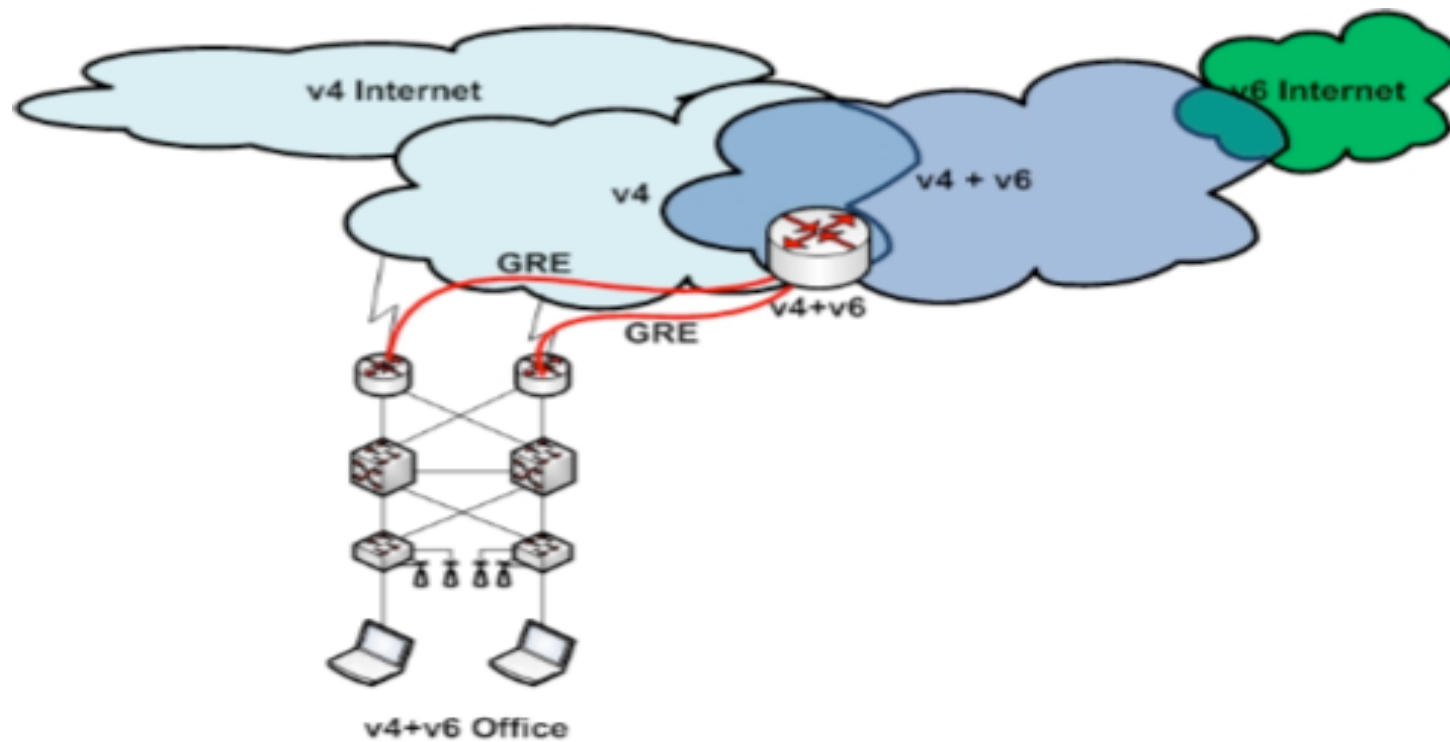
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Phase One : Initial Lab Testing

- Initially driven as 20% project.
- Host to router GRE Tunnels.
- Followed by dedicated Lab deployments in various offices with GRE Tunnels to a one Dual Stack Router.
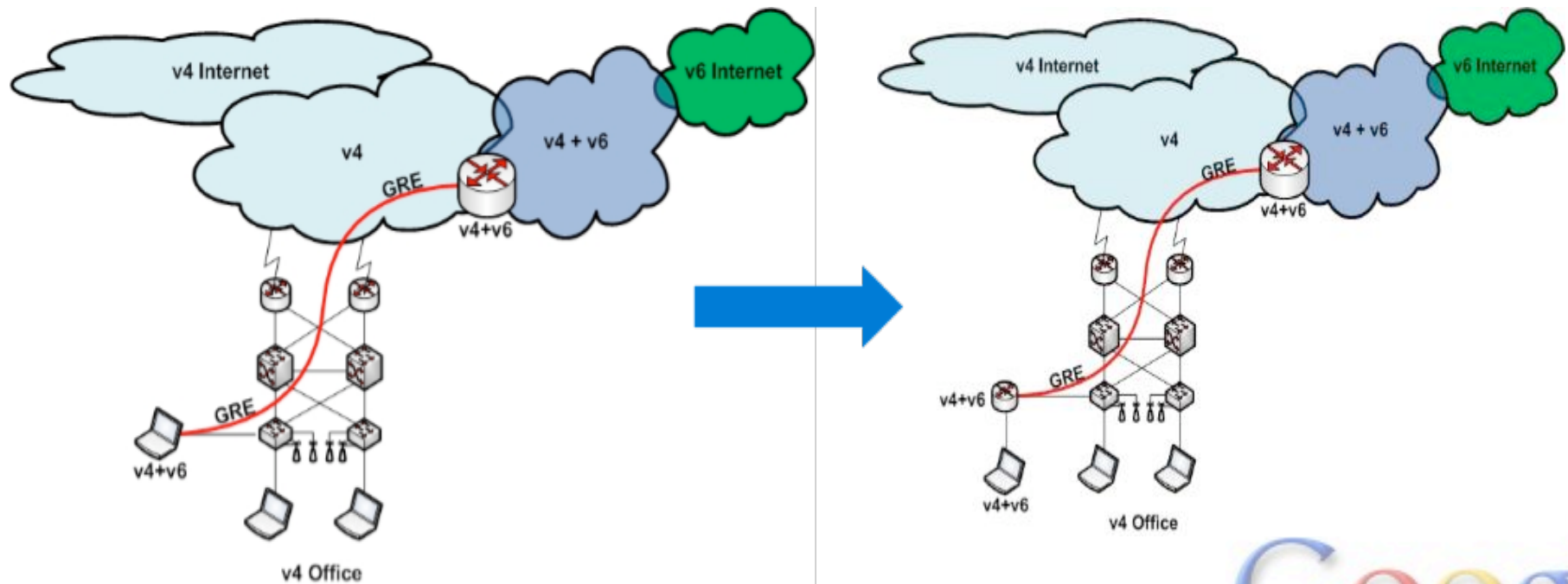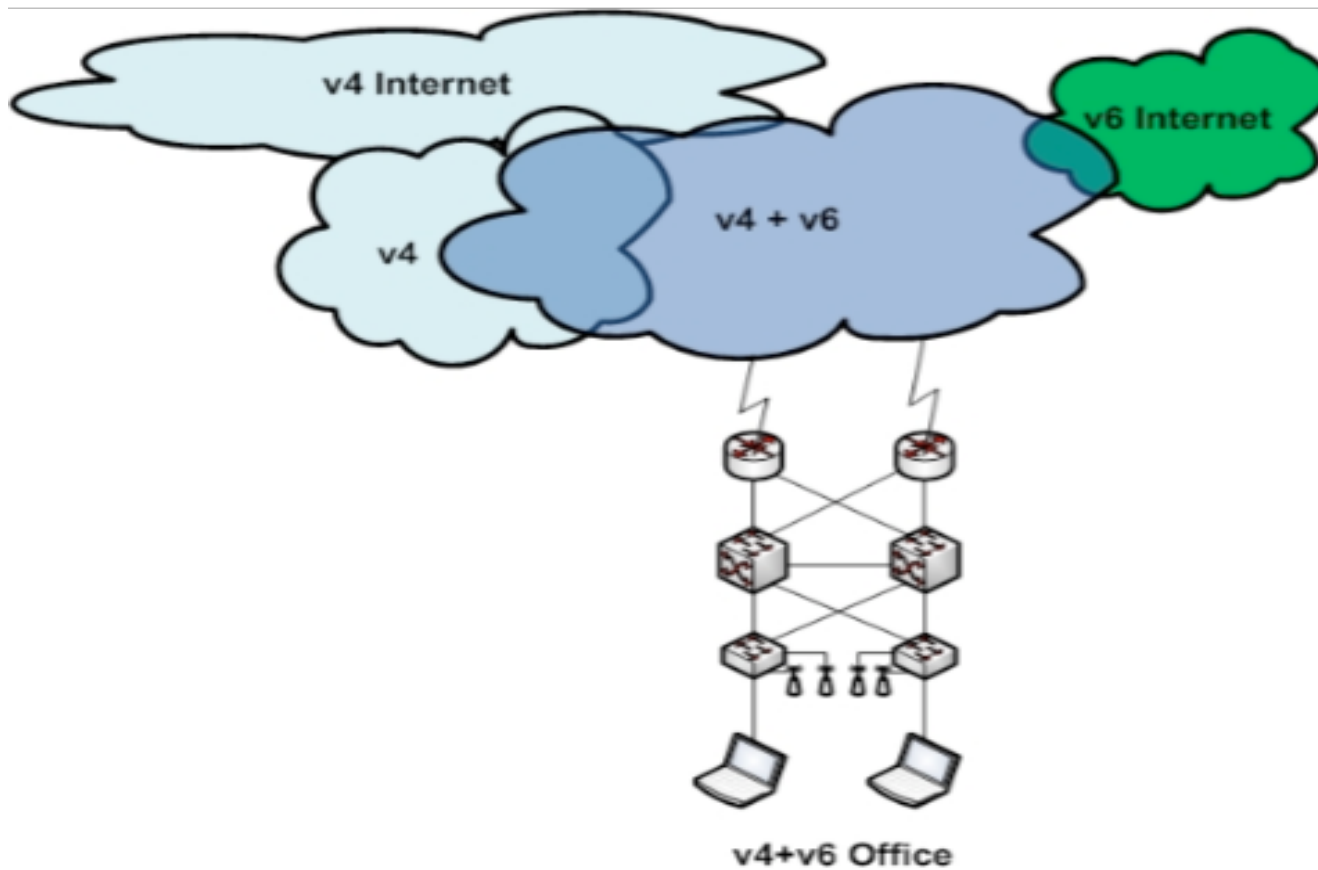
Phase 2: Offices deployment with GRE Tunnels

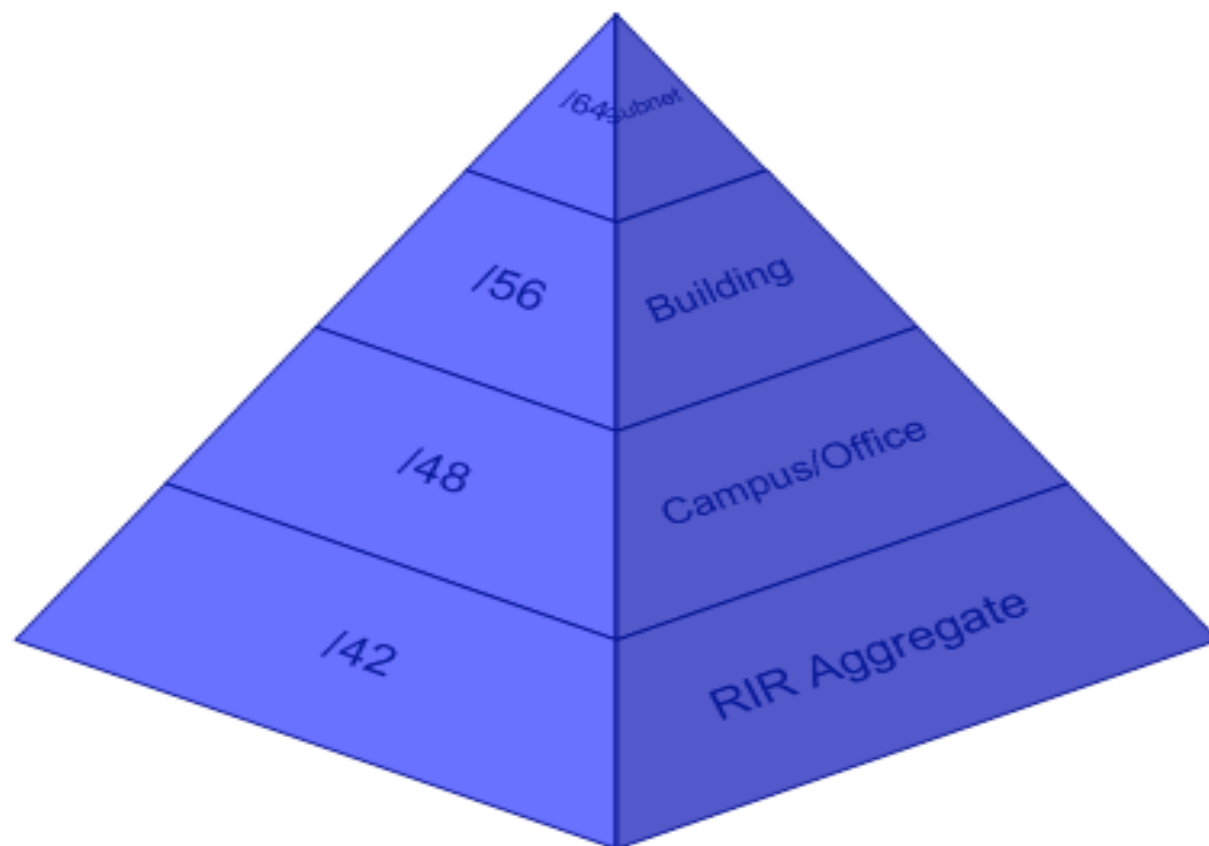- Dual Stack the office network and build GRE tunnel from WAN Border Routers to the egress IPv6 peering router.

Phase 3: True Dual Stack

- Dual stack the upstream WAN connections on the Transit and MPLS VPN.

Addressing Plan

- Assign /64 for each VLAN or Point to Point link.
- Assign /56 for each building.
- Assign /48 for each campus or office.

Addressing Scheme

IPv6 Protocols and Routing Policy

Protocols :
- HSRPv2 : 1st Router redundancy.
- OSPFv3: Interior Gateway Protocol.
- MP-BGP: Exterior Gateway Protocol.
- SLAAC

Routing Policy:
- Advertise the office aggregate routes to the provider.
- Accept default routes only from the transit.

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Challenges

Hardware and Software Support:
- Certain Hardware platform support IPv6 on the software only.
- Partial or limited IPv6 support on certain hardware platforms.

Service Providers:
- Limited support for IPv6 at various service provider networks.
- Longer implementation time. (Slow deployment SLA).

Q & A

Thank You